

What is claimed is:

1. A method for characterizing packet interarrival times on an ATM network, comprising:

providing (a) a number of packets in a first portion of a plurality of packets that will be or have been transported on an ATM network, the packets in the first portion containing at least one of voice and video information, and (b) a number of packets in a second portion of the plurality of packets, the packets in the second portion containing information other than the at least one of voice and video information;

generating with a lognormal number generator a plurality of packet interarrival times values corresponding to at least some of the packets in the first portion ; and

generating with a normal number generator a plurality of packet interarrival times corresponding to at least some of the packets in the second portion.

2. The method of Claim 1, wherein the providing step includes (i) multiplying (a) a percentage of the plurality of packets that corresponds to the first portion; and (b) the plurality of packets to provide the number of packets in the first portion and (ii) multiplying (a) a percentage of the plurality of packets that corresponds to the second portion and (b) the plurality of packets to provide the number of packets in the second portion.

3. The method of Claim 1, wherein the generating step for the packets in the first portion includes the step of inputting the number of packets in the first portion and a mean and a variance of a lognormal distribution characterizing packet interarrival times of the packets in the first portion into the lognormal number generator.

4. The method of Claim 1, wherein the generating step for the packets in the second portion includes the step of inputting the number of packets in the second portion and a mean and a variance of a normal distribution characterizing packet interarrival times of the packets in the second portion into the normal number generator.

5. The method of Claim 1, further comprising combining the plurality of interarrival times output by the lognormal number generator and the plurality of interarrival times output by the normal number generator.

6. The method of Claim 1, further comprising providing a lognormal fraction of packets in the second portion having lognormally distributed packet interarrival times and a normal fraction of packets in the second portion having normally distributed packet interarrival times and wherein the generating step for the packets in the second portion is applied to the number of packets in the normal fraction of packets and further comprising for the number of packets in the lognormal fraction of packets generating a plurality of packet interarrival times using a lognormal number generator.

7. The method of Claim 6, further comprising combining the plurality of packet interarrival times output by all of the number generators to provide a synthetic traffic stream.

8. A method for simulating traffic in an ATM network, the ATM network transporting a stream of packets, the packet stream including a plurality of packets, comprising:

5 generating an at least substantially lognormally distributed set of packet interarrival times corresponding to the plurality of packets.

9. The method of Claim 8, wherein the stream of packets further includes a second plurality of packets, the interarrival times of the second plurality of packets being distributed differently from the interarrival times of the plurality of packets; and further comprising:

5 generating an at least substantially normally distributed set of packet interarrival times corresponding to the second plurality of packets.

10. The method of Claim 9, further comprising: (i) multiplying (a) a percentage of the packet stream that corresponds to the plurality of packets and (b) a number of packets in the packet stream to provide the number of packets in the plurality of packets and (ii) multiplying (a) a percentage of the packet stream that corresponds to the second plurality of packets and (b) the number of packets in the packet stream to provide the number of packets in the second plurality of packets.

11. The method of Claim 8, wherein the generating step for the packets in the plurality of packets includes the step of inputting the number of packets in the plurality of packets and a mean and a variance of a lognormal distribution characterizing packet

interarrival times of the packets in the plurality of packets into a lognormal number
5 generator.

12. The method of Claim 9, wherein the generating step for the packets in the
second plurality of packets includes the step of inputting the number of packets in the second
plurality of packets and a mean and a variance of a normal distribution characterizing packet
interarrival times of the packets in the second plurality of packets into a normal number
5 generator.

13. The method of Claim 8, further comprising combining the plurality of packet
interarrival times output by a lognormal number generator and the plurality of packet
interarrival times output by a normal number generator.

14. The method of Claim 9, wherein the packet interarrival times of the packets
in the plurality of packets are less than a predetermined value and the packet interarrival
times of the packets in the second plurality of packets are more than the predetermined
value.

15. The method of Claim 9, wherein the generating step of Claim 8 for the
packets in the plurality of packets includes the step of inputting the number of packets in the
plurality of packets and a mean and a variance of a lognormal distribution characterizing
packet interarrival times of the packets in the plurality of packets into a lognormal number
5 generator and wherein the generating step of Claim 9 for the packets in the second plurality

of packets includes the step of inputting the number of packets in the second plurality of packets and a mean and a variance of a normal distribution characterizing packet interarrival times of the packets in the second plurality of packets into a normal number generator; and

10 further comprising combining the plurality of packet interarrival times output by all of the number generators to provide a synthetic traffic stream.

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16. A system for simulating traffic on an ATM network, wherein a plurality of packets are in a packet stream that will be or have been transported on an ATM network, the system comprising:

5 lognormal number generating means for generating an at least substantially lognormally distributed plurality of values corresponding to the plurality of packets;.

17. The system of Claim 16 further comprising a second plurality of packets in the packet stream.

18. The system of Claim 17, wherein the plurality of packets correspond to packet interarrival times less than a selected value, and the second plurality of packets correspond to packet interarrival times greater than the selected value.

19. The system of Claim 17, further comprising normal number generating means for generating an at least substantially normally distributed plurality of values corresponding to the second plurality of packets.

20. The system of Claim 16, further comprising lognormal inputting means for inputting the number of packets in the plurality of packets and a mean and a variance of a lognormal distribution characterizing packet interarrival times of the packets in the plurality of packets into the lognormal number generating means.

21. The system of Claim 17, further comprising normal inputting means for inputting the number of packets in the second plurality of packets and a mean and a variance of a normal distribution characterizing packet interarrival times of the packets in the second plurality of packets into the random number generating means.

22. The system of Claim 19, further comprising combining means for combining the plurality of values output by the lognormal number generating means and the plurality of values output by the normal number generating means.

23. The system of Claim 17, wherein the interarrival times corresponding to the packets in the plurality of packets have a substantially lognormal distribution and the interarrival times corresponding to the packets in the second plurality of packets have a substantially normal distribution.

24. The system of Claim 18, wherein a lognormal fraction of packets in the second plurality of packets have lognormally distributed packet interarrival times and a normal fraction of packets in the second plurality of packets have normally distributed packet interarrival times and wherein the normal number generating means is applied to the number of packets in the normal fraction of packets and further comprising for the packets in the lognormal fraction of packets lognormal number generating means for generating a second plurality of at least substantially lognormally distributed values.

25. The system of Claim 24, further comprising combining means for combining the plurality of lognormal and normal values output by all of the number generating means to provide a synthetic traffic stream.

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26. A system for characterizing traffic on an ATM network, wherein first and second pluralities of packets are in a packet stream that will be or have been transported on an ATM network, the system comprising:

5 a lognormal number generator for generating a plurality of at least substantially lognormally distributed values corresponding to the first plurality of packets;

a normal number generator for generating a plurality of at least substantially normally distributed values corresponding to the second plurality of packets; and

10 a combiner, in communication with the lognormal random number generator and the normal random number generator, for combining the plurality of at least substantially lognormally distributed values and the plurality of at least substantially normally distributed values to provide an aggregate stream of values.

27. The system of Claim 26, wherein at least some of the first plurality of packets contain at least one of voice and video information, and the second plurality of packets contain information other than the at least one of voice and video information.

28. The system of Claim 26, wherein the first plurality of packets correspond to packet interarrival times less than a selected value, and the second plurality of packets correspond to packet interarrival times greater than the selected value.

29. The system of Claim 26, further comprising a lognormal input, in communication with the lognormal number generator, for inputting the number of packets in the first plurality of packets and a mean and a variance of a lognormal distribution

5 characterizing packet interarrival times of the packets in the first plurality of packets into the lognormal number generator.

30. The system of Claim 26, further comprising a normal input, in communication with the normal number generator, for inputting the number of packets in the second plurality of packets and a mean and a variance of a normal distribution characterizing packet interarrival times of the packets in the second plurality of packets into
5 the normal number generator.

31. The system of Claim 26, wherein the interarrival times corresponding to the packets in the first plurality of packets have a substantially lognormal distribution and the interarrival times corresponding to the packets in the second plurality of packets have a substantially normal distribution.

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